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or tribe, and depend upon age, sex, and general health. Exposure, mode of living, climate, and altitude are, furthermore, the main factors which determine the many different shades of the color of the skin, not only among the Mongoloids, but also among the white and black races.

Let us suppose for a moment that the color of a Mongolian were yellow, and that of an American red: would it ever occur to a modern anthropologist to classify them for this reason in a separate and distinct race?

There is no race in which both the color of the skin and the color of the hair vary more than in the white. Think of a blond, florid complexioned Teuton, and an Italian with raven-black hair and dark skin. And yet, on account of the rest of their physical characteristics, they belong to the same race.

After this, what Dr. Brinton said about the difference between the character and color of the hair of Mongolians and Americans needs no further refutation.

Although I have probably studied somatologically more American Indians, and have examined more of their skulls, than any other anthropologist living, as yet I hesitate to name "a positive cranial characteristic of the red race." At any rate, Dr. Brinton is mistaken in thinking that the *os Incae* is found in its extreme development in the "American race," and in its greatest rarity among the Mongolians. What in the days of Von Tschudi seemed true, has been refuted since. As I write this without any books at my disposal, and simply quote from memory, I cannot now give any statistics of the relative frequency of this anomaly in different races, but would refer to Virchow's and my own investigations on this subject (VIRCHOW, *Ueber Merkmale niedrer Menschenrassen am Schädel*; TEN KATE, *Craniologie der Mongoloiden*).

Although it is true that the glabella is more prominent in American skulls than in Altaic or northern Mongoloid crania, this is no argument to separate them racially from each other. The African negroes, for instance, seldom have a prominent glabella; the Australians, on the contrary, have, as a rule, an exceedingly strongly developed glabella; but nevertheless both African negroes and Australians are considered as belonging to the same race.

As far as the "Aymarian depression" is concerned, one might as well call all different artificial deformities of the skull, those in Europe included, racial characteristics. They are merely incidental, and belong as much to the domain of ethnology as to that of physical anthropology.¹

It is not quite correct to assert, that, "of all the peoples of the world, the Mongols, especially the Turanian branch, are the most brachycephalic."

Many years ago, in the days when our craniologic knowledge was very limited, we had reason to believe this to be a fact; but since one armchair anthropologist copied this statement from the other, and since Aitken Meigs studied craniology after very imperfect methods, facts have accumulated to show that in America also we find extreme brachycephaly, as well among the prehistoric as among the historic peoples, from British America to Patagonia. At the same time extreme dolichocephaly is found, besides among the Eskimo, throughout the American Indian tribes, from north to south; but it cannot be considered an American craniologic characteristic, for among the Asiatic tribes dwelling nearest to the Eskimo (the Aleuts, for example), dolichocephaly in a marked degree is found, which fact is in absolute contradiction to Dr. Brinton's assertion (see, among other works, DE QUATREFAGES and HAMY, *Crania ethnica*; KOLLMAN, 'Die Autochthonen Amerika's,' in *Zeitschrift für Ethnologie*, 1883; TOPINARD, *Éléments d'Anthropologie générale*; and my own publications in American and Asiatic anthropology).

The value of the so-called 'Mongolian eye' (*l'œil bridé*) may have been exaggerated as a racial characteristic: it is nevertheless

very frequent among children, both of Mongolians and native Americans, as also among women, more than in any other race I know of. As it is admitted that in all races women and children show certain racial characteristics, especially those belonging to physiognomy, better than men, we may safely call the Mongolian eye a racial characteristic, though perhaps of less importance.

As regards the nasal index, before we can draw any conclusions from it, we have to make a distinction between the nasal index of the living (*sur le vivant*) and the nasal index of the bony skull, which often are in no correlation at all. Such is the case among the Eskimo, who are leptorrhinic, and belong at the same time to the same group as the American and northern Asiatic tribes.

To come to Dr. Brinton's last argument against the asserted Chinese traits of certain American tribes, I must say, that, although I never have seen any living Botocudo, I have examined their crania, and find that there is a certain resemblance between them and those of the Eskimo. If I am not wholly mistaken, Dr. Ph. Rey, who has also lived among the Botocudo, has pointed out this similarity in his anthropological study on this tribe (Paris, 1880).

I cannot say whether the tribes of the North-west Pacific coast have any Chinese traits, as I have not seen them myself; but this I can state, that among several tribes in North and South America (for example, Iroquois, Apaches, Hualapais, Maricopa, Pima, Carib, Arowak) I have seen persons who strongly resembled not only Chinese, but also Japanese and other Mongolians, and even Malays.

In some of them this similarity was so marked, that once on the Demerara River, in British Guiana, I questioned some Indians of the Ackawoio tribe, to convince myself that they were not Chinamen.

Dr. Brinton admits that the Eskimo "possess in some instances a general physiognomical similarity," concluding that "this is all," and "not worth much as against the dissimilarities mentioned." Does not Dr. Brinton know that physiognomy is really a very important consideration in racial distinctions? Every anthropologist knows that physiognomy is a complex of different traits, several of which are first-class racial characteristics. I will only mention the general shape of the forehead, the implantation and form of the nose, and the breadth and length of the face. If physiognomical characteristics had as little value as Dr. Brinton seems to think, then we might as well give up the study of physical anthropology altogether.

To recapitulate my criticism, I wish to say that Dr. Brinton's argumentation against the affinity between Americans and Mongolians is based upon entirely wrong reasoning. If the reasons he gives were correct, then the classification of the other races of the human species would be equally wrong; for in each of them peoples are grouped together, which, although related by physical characteristics, are linguistically and ethnologically entirely different from each other, not to speak of the difference in their psychological and social evolution.

When I admit that the native Americans are Mongoloids, I do not necessarily imply that America has been populated from Asia or elsewhere. However, if we accept the theory of evolution, this is the most probable explanation of the observed facts. But, leaving the doubtful origin of the Americans, and of their languages and arts, out of the question, I maintain that there is a physical similarity, racial affinity, and relationship between the indigenous Americans and the Mongolians in the widest sense.

This is, in the present state of anthropological knowledge, an undeniable fact. He who denies it does not believe in physical anthropology; and not to recognize this branch of science is equal to denying natural history in general. DR. H. TEN KATE.

Mexico, Oct. 8.

Queries.

38. WHEN WAS THE BILLION CHANGED?—Can any of the readers of *Science* state at what time, and from what incentive (by what fatuity), the people that has proposed a system of metrology for universal adoption depreciated the arithmetical *billion* (the second power of the million) to a nominal 'trillion,' making the anomalous 'billion' one-thousandth of its explicit value?

W. B. T.

Washington, D.C., Oct. 31.

¹ Although Dr. Brinton does not mention any ethnologic peculiarities as having been asserted in favor of the affinity between Mongolians and Americans (for they have been asserted), I think it would have been worth while to discuss them. What I said above about the study of archæology is equally true in regard to ethnology. Systematic and comparative, and, above all, empiric ethnological researches, both among the native Americans, especially the northern, and among different Mongolians, particularly the Siberian tribes, would throw much light upon their relationship. I think, for example, that we will never be able to understand thoroughly the ethnology of the Tinné tribes, as long as the Mongolians proper, and certain erratic tribes in the Gobi, have not been studied.